

DISCUSSION.

DR. NORRIS.—I have had an opportunity of examining this remarkable case, and I can bear witness to the accuracy of the picture. The appearances were absolutely limited to the distribution of the retinal vessels.

SOME MEDICO-LEGAL CASES UNDER STATE
AND NATIONAL LAWS.

BY B. JOY JEFFRIES, M.D.,

BOSTON.

IN the Massachusetts Statutes, Chap. 194, as amended, is an Act relative to the employment by Railroad Companies of persons affected with Defective Sight or Color-Blindness, which reads as follows :

SECT. 1. No railroad company shall employ or keep in its employment any person in a position which requires him to distinguish form or color signals, unless such person has been examined for color-blindness or other defective sight, by some competent person employed and paid by the railroad company, and has received a certificate that he is not disqualified for such position by color-blindness or other defective sight.

SECT. 2. A railroad company shall be liable to a fine of one hundred dollars for each violation of the preceding section.

The Act went in force July 1, 1881. Its wording was designedly made so as to defeat the purpose of a law protective to stockholder, employé and the community. It is practically as dead a letter as the liquor laws, as I recognized that it would be when passed.

In my Infirmary and private practice, cases quite frequently occur illustrating the truth of the above statement. Many more must naturally occur in the practice of my colleagues. Attention should be called to them. The following cases are typical of those I have records of. Any member of the Society is liable to be summoned in court as witness or expert in connection with such cases, and under the gravest circumstances.

AS TO THE FORM-SENSE.

No. 1.—A young man wants to go on to one of two railroads. Vision of right eye = $\frac{1}{2}\frac{6}{8}$, of left eye normal with + D. 1.25, a lack of vision and a hypermetropia which should keep him from any position where glasses cannot be worn, which position he does not want. There is nothing to prevent "any competent examiner" giving him a certificate as engineer.

No. 2.—A fireman at work on a road and desiring promotion to engineer, has converging strabismus. In right eye a hypermetropia of D. 2.50 and vision = $\frac{6}{18}$, in the left, squinting, eye Hm. = D. 2.50 and vision = $\frac{6}{36}$. There being no legal standard set and no expert appointed to detect the hypermetropia, this man has readily passed such test as his road made.

No. 3.—A brakeman has no certificate (the fine to the railroad for this is one hundred dollars). He has Hm. = D. 1.50, V. O.D. = $\frac{1}{2}\frac{9}{8}$, O.S. = $\frac{2}{2}\frac{9}{8}$; requires + D. 2.50 to read. Without glasses he could not read an order or a telegram.

No. 4.—A brakeman has been on a road some three years. Without glasses, V. O.D. = $\frac{6}{24}$, V. O.S. = $\frac{1}{6}\frac{6}{8}$; V. O.D. with + D. 4.50 = $\frac{6}{12}$, V. O.S. with + D. 1.00 = $\frac{3}{8}\frac{6}{8}$. The only test he had was the train despatcher asking him how many knobs there were on an adjacent telegraph pole, and telling him his vision was as good as any one on the road.

No. 5.—A brakeman has been on three roads, only tested on one. He has convergent strabismus, great pain and marked symptoms of cerebral trouble. Only pain and fright keep him from his duty, from which he just comes. No law requires him to be off duty.

No. 6.—A gateman applies to me for certificate for full pension for blindness contracted in the army. He groped his way into my office. He had white atrophy of optic nerve in each eye. He says at times he is completely blind in the sun, so he cannot see people on his crossing, which is an important one. He holds a certificate from his road examiner, "that he is not disqualified by defective sight."

No. 7.—An engineer comes from off his train with a foreign body on the cornea, requiring cocaine to remove, the "boys" having been at work on it. He refused atropine and cold

compress, which were needed, and went back to his train to run some fifty miles. There was nothing to prevent him in his wholly unfit condition. Interference would only have provoked abuse.

No. 8.—A similar case of a conductor, worse off, as it was before cocaine.

No. 9.—An engineer has vision without glasses, O.D. = $\frac{20}{40}$, O.S. = $\frac{20}{80}$; V. O.U. with + D. 1.25 = $\frac{20}{20}$. Not color-blind. He was 52 years old, and his sight too poor for his position. Another employé testing him, of course certifies to him.

No. 10.—A fireman, with vision normal and not color-blind, comes to be tested on his own idea, as he has never been tested or certified to by his road, where he has been some time. Road subject to one hundred dollars fine.

No. 11.—Engineer, 56 years old, brought by his superintendent, is not color-blind, has vision O.U. = $\frac{20}{20}$. The superintendent was frightened and took him off his engine. Under legal standard requirements and legal expert testing, this injustice could not have been done the man.

No. 12.—A conductor has lost his place on an employé's examination. He is quite hypermetropic, easily corrected by glasses, which there is no objection to his wearing. Another injustice from want of legal standards of requirement and testing. On learning my name his abuse was profuse, though all my efforts have been to prevent such injustice to employés. Office seekers had falsely misled him.

AS TO THE COLOR-SENSE.

No. 1.—A gateman was turned off as color-blind. I found him only partially so. He never would have mistaken the lanterns in his hands. He had saved several lives at his crossing, was perfectly honest about his condition. The road examiner was afraid of certifying to him. Legal standards of color perception would have saved this injustice; but it would have required an expert to test and certify to his usefulness. I would not have passed him as engineer.

No. 2.—An engineer at work on a road I found perfectly color-blind. He was examined in the presence of the superin-

tendent and his brother employés. The superintendent had spent a good many hours going over with me the whole subject of defective vision practically, and declined to test his men himself. Neither he nor the employés would consent to this engineer being where he had to read colored signals. He was given a position in the shop, where he and the road made more money. His outside friends, who did not see the examination, carried him to another ophthalmic surgeon who, the superintendent told me, passed him as competent. This did not, however, affect the superintendent's decision, who said he would not employ him as engineer with any one's certificate. The certificate from the other surgeon would allow this dangerous man to be *legally* employed.

No. 3.—A brakeman or fireman whose turn came soon after this engineer (No. 2) made all the characteristic mistakes of a color-blind with the three Holmgren tests. He was quite convinced himself that he was color-blind, and resigned to rejection. The superintendent and the other employés were equally convinced from their own observations of the man's dangerous color-blindness. An experience with some thirty thousand examinations had, however, taught me, that whilst the man made the most thorough and characteristic mistakes of defective color-sense, he did not make them in the *way* the color-blind do. I first thought he was deceiving me and imitating the color-blind engineer preceding him. It proved that he *had* carefully watched and imitated him, not with the idea of deceiving, but because he supposed this engineer was right and all the normal eyed selections he had seen were defective. He would have been rejected on all other roads where no expert was employed; a legal injustice.

No. 4.—An engineer whom I found *incompletely* color-blind was doubted, and no certificate given him by his road (rendered liable to \$100.00 fine), although he was allowed to run. An accident happening frightened the officials, and his "boss" was telegraphed to let no one out that night without a certificate. He having none was dropped. He would not have been under legal standards, from his term of service and success, or he could have been transferred to day work.

No. 5.—A master mechanic came to me for presbyopia and was found completely color-blind. His vision for form was remarkable, being equal to my own very nearly, $\frac{2}{3}$. He described his utter inability to read the colored signals, having often watched them on the track with his little boy who could tell them at once. As master mechanic he hired all employés who had to read color-signals, and his decision would be final. This would be perfectly legal.

No. 6.—An engineer is brought me by his superintendent and master mechanic. He was completely color-blind, even under such practical tests as they asked for. Till they had seen these a certificate from me would have induced them to keep him at his work, where he relied wholly on guess and his fireman. My certificate would have been entirely legal.

No. 7.—Another engineer brought at the same time was only a little less color-blind, and more dangerous on that very account.

No. 8.—A conductor from same road applied to me for certificate. He was completely color-blind. My certificate of usefulness would have reinstated him or placed him on another road, had I given one.

I could not blame some of these and other employés who have been to me offering me the very heavy fees they did for a certificate. And I should have sympathy with a half-starved struggling physician yielding to the pecuniary pressure. It should be legally impossible by state laws or corporation regulations. Standard requirements and competent expert examiners can alone insure honesty and fairness to all concerned.

UNDER NATIONAL LAWS.

The form-sense and the color-sense of officers and men entering the U. S. Army and Navy are tested, and a certain standard is required as to the visual power. For the navy and naval academy the restriction is naturally greater as to defective color-sense. So many cases of myopia, hypermetropia and color-blindness have been before me in those desiring to enter army or navy that I wrote a letter on the subject to our local medical journal and sent an extra to our

members. As it may not have been received, or thrown aside, I repeat it here :

[From the Boston Medical and Surgical Journal, April 29, 1886.]

PHYSICAL EXAMINATION OF CANDIDATES FOR THE UNITED STATES NAVAL AND MILITARY ACADEMIES.

MR. EDITOR,—Members of Congress when having the right of nomination in their districts generally ask some physician to examine the young men who apply for the position. Such examination includes that of the visual power and color-sense of the candidate. As only a certain amount of hypermetropia or of myopia will be passed by the United States medical examining boards and no degree of color-blindness by the naval medical board, it is pretty important that defective vision for form or color should be detected by the doctor certifying to the young man's physical condition.

It is more than mortifying to young men, who pass an excellent examination, to be afterwards thrown out for physical defects. Cases have applied to me, and I have heard of others, of excessive myopia and color-blindness, when months were wasted in preparing for the ordeal. If the physician originally applied to cannot be sure of the degree of hypermetropia or myopia, it certainly would be better to send candidates to the nearest ophthalmic surgeon who can decide, than to have the young man rejected by the medical board afterwards.

Defects of the color-sense may readily escape detection by methods of testing ordinarily used, as asking the names of colors, etc. The surest means is to apply Professor Holmgren's test with the worsteds, as will be done to the candidates by the medical board. They, however, will have a proper collection of worsteds, but exactly the same can be procured of N. D. Whitney & Co., 129 Tremont Street, Boston, with whom I arranged to keep on hand type collections, at the request of the American Ophthalmological Society.

Physicians have written to me from different parts of the country complaining of their utter inability to apply Holmgren's test as described in my manual. On investigation I have found that they did not have a proper set of worsteds, but some of the imitations advertised and sold in New York and Philadelphia. An examination of these imitations showed that they could not possibly be used to properly carry out Holmgren's test. I hasten to say that I have no pecuniary interest in Mr. Whitney's sale of worsteds. I am desirous that the now necessary application of Holmgren's brilliant invention should not be interfered with by tradesmen's ignorance or cupidity, and that physicians should not be imposed on.

Yours truly,

B. JOY JEFFRIES, M.D.

15 CHESTNUT ST., BOSTON,
April 20, 1886.

The report of an international signal commission, awaited by other maritime nations, can under present conditions and recent acts of Congress be made at once applicable and enforced. Only such can possibly contend against outside pressure and neglected duty in the interest of the dangerously defective.

No. 1.—A young man has passed a physician's inspection, goes up for examination for West Point, passes mentally brilliantly, but is rejected for vision only one-fourth, from myopia, likely to increase. This my testing confirmed. The loss of time and mortification were needlessly incurred.

No. 2.—A very parallel case came in a would-be naval cadet.

No. 3.—I was applied to by a young man who had passed an excellent mental and physical examination to enter the naval academy, with the exception that the medical board rejected him as color-blind. A special order of the Secretary of the Navy granted him another color examination. He purchased a set of Holmgren's worsteds, my color chart for educating the normal color-sense in the schools, and finally wrote me that his mother had cured him by education. I have no doubt that *outside pressure* might put him into Annapolis against the medical board's protest. The agreements made by an international signal commission would alone prevent any such pressure. It would force medical officers to be more certain by being more thoroughly posted, and render their decision final.

No. 4.—A naval officer completely color-blind has gone on the *black* retired list, from lack of international standards to protect him.

In the revenue marine, officers and men are tested and some standard applied under the marine hospital service. In the merchant marine, masters, mates and seamen may be blind and color-blind; there is no law touching them. Pilots may be blind, and no test is required of their form perception. They are tested for color-blindness and rejected if the examining surgeon declares them defective, or allowed only day routes. If he says *partially* defective, the local inspectors of steam

vessels may pass them, no matter how dangerous they are, as proved. The adoption of the necessary report of an international signal commission can alone insure the requisite knowledge on the part of the medical officers and prevent any and all interference with their decision, which decision would be guided by internationally agreed standards, etc.

No. 1.—The results of the examination of a pilot are referred to me from Washington for decision. The report of the medical board, etc. I reply, that without personal examination of the candidate I could not fairly decide. The officers could have been readily taught so as not to have been in doubt. It must, however, be remembered that every sort of outside and inside pressure has been employed to prevent any examinations or rejections by medical officers.

No. 2.—A captain who desired a pilot's license was declared color-blind by the marine hospital surgeon. The local inspectors doubted it and advised appeal to me. I found he had normal form and color-sense. As I had induced the law, and he was my patient, I felt it my special duty to have him get his license. Upon proper inquiry I found that the medical man was an acting surgeon awaiting promotion, who had not studied my manual placed by the government in his hands and had a poor and insufficient collection of worsteds, which he did not realize. He had fallen into the usual error of *asking the man the names of colors*, and got him as mixed as himself. I reported the case to Washington, it was referred to other marine hospital surgeons to consult with me, and I readily showed the mistake, and the man soon had a pilot's license.

No. 3.—A captain acted as pilot on an important route. When the law was enforced the marine hospital surgeon found him completely color-blind, and he was rejected. All sorts of pressure was made, as in other cases. He appealed to the Treasury Department over the Inspectors, and the following letter is printed in their report :

TREASURY DEPARTMENT, NOVEMBER 5, 1880.

SIR,—The Department has received your letter of the 28th, in which you ask that having been rejected in your examination for a pilot's license on account of color-blindness, you may be accorded

a second examination by the local inspectors. In reply, you are informed that if your case comes within the provisions of Department Circular, No. 46, 1880, a copy of which is herewith enclosed, you are entitled to appear before the local inspectors at Boston for re-examination without appeal to the Department. Otherwise, the Department is not disposed to make further modification of the regulations upon this subject.

Very Respectfully,

J. H. UPTON,

Acting Sec.

In order to yield to the outside pressure and prevent the discharge or refusal of color-blind pilots, a rule was made that if the surgeon said the man was *partially* color-blind he could be referred to the local inspectors. These always passed him, their tests being as silly as ignorant.

A patient of mine who was a friend of this pilot, after his appeal, etc., brought him to me, and the very practical tests applied quickly induced the friend to advise the pilot to give it up. This the pilot could not see. Some three years afterwards the former employer of this pilot brought him to me again to test. I explained his case, the department action, etc., but was met by the exhibition of his license in due form. This his employer did not care for, but wanted personally to see what was the trouble, etc., as he would run no risk on his steamers. The same practical tests, such as a colored side light held in the sun six feet before the pilot's face and not recognized, soon convinced the employer as it had the friend. On inquiry I found another marine hospital surgeon had tested the pilot and called him *partially* color-blind, which enabled the inspectors to pass him by *their* tests. They did not even limit him to day work. Their records give him a full license. Comment is hardly necessary. How many more are there?

The Society will recognize that any of these cases might have come under their observation, and *that* under the gravest conditions of danger to life and property. I would recommend caution and attention.